Amendment of the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application. Please amend the claims as indicated below:

1. (Currently Amended) A method for determining the angular orientation of an object comprising:

obtaining a plurality of images of the object wherein the plurality of images consists of three images taken by each of three cameras;

assigning values to a plurality of positions in a polar plot using data from the images, the polar plot having an origin and data from each image being assigned to a corresponding sector of the polar plot and wherein said assigning includes assigning one of the images to each of three 120 degree intervals of the polar plot; and

computing a centroid based on the assigned values wherein an angle of the centroid with respect to the origin indicates the angular orientation of the object.

2. (Currently Amended) The method according to claim [[1]] 12, wherein said assigning comprises identifying positions in the polar plot that are uniformly spaced, identifying corresponding pixels in the image for the positions in the polar plot and assigning luminance values for the pixels to the positions in the polar plot.

3. (Original) The method according to claim 2, wherein said assigning further comprises interpolating for positions in the polar plot that are between pixels.

4. (Currently Amended) The method according to claim [[1]] 12, wherein said assigning results in a non-linear mapping of pixel position to polar position.

5. (Currently Amended) The method according to claim [[1] 12 further comprising determining a width of the object by scanning each image.

6. (Currently Amended) The method according to claim 1, further comprising calibrating the cameras prior to obtaining the images from the cameras.

7. (Original) The method according to claim 6, wherein said calibrating comprises obtaining images of a cylindrical object of uniform color.

8. (Currently Amended) The method according to claim [[1]] 12, wherein the plurality of images consists of four images taken by each of four cameras and wherein said assigning includes assigning one of the images to each of four quadrants of the polar plot.

9. (Cancelled)

10. (Currently Amended) The method according to claim [[1]] 12, the polar plot is divided into sectors with an image of the plurality being obtained for each sector and with all sectors of the polar plot being imaged.

11. (Currently Amended) The method according to claim [[1]] 12, wherein said images are obtained from near-infrared light from the object.

12. (Currently Amended) A method for determining the angular orientation of an object comprising:

obtaining a plurality of images of the object;

assigning values to a plurality of positions in a polar plot using data from the images, the polar plot having an origin and data from each image being assigned to a corresponding sector of the polar plot;

computing a centroid based on the assigned values wherein an angle of the centroid with respect to the origin indicates the angular orientation of the object; and ~~The method according to claim 1, further comprising~~ determining a location of the object in the field of view of each of a plurality of cameras and when the object is not in the center of the field of view, said assigning is corrected according to its distance from the center.

13. (Cancelled)

14. (Currently Amended) The method according to claim [[13]] 18, further comprising directing the person's voice at a remote location according to the angular orientation of the person's head.

15. (Currently Amended) The method according to claim [[13]] 18, further comprising estimating a vertical position of the person's eyes and obtaining luminance values of the images at or below the level of the person's eyes.

16. (Original) The method according to claim 15, wherein said estimating comprises scanning the images to locate the top of the person's head and measuring a distance down from the top of the person's head.

17. (Original) The method according to claim 15, wherein said estimating comprises scaling the images.

18. (Currently Amended) ~~The method according to claim 13, further comprising~~ A method for determining the angular orientation of an object comprising:

obtaining a plurality of images of a person's head;

assigning values to a plurality of positions in a polar plot using data from the images, the polar plot having an origin and data from each image being assigned to a corresponding sector of the polar plot;

computing a centroid based on the assigned values wherein an angle of the centroid with respect to the origin indicates the angular orientation of the person's head; and

performing a 180 degree correction of angular orientation of the person's head.

19. (Currently Amended) The method according to claim [[13]] 18, further comprising displaying images of a remote location for the person.

20. (Currently Amended) The method according to claim [[13]] 18, wherein said images are formed by performing difference keying.

21. (Original) The method according to claim 20, wherein said images are obtained from near-infrared light from the person's head.

22. (Original) The method according to claim 20, wherein said performing difference keying includes subtracting a baseline image of an apparatus from an image obtained with the person's head being located within the apparatus.

23. (Original) The method according to claim 22, wherein the apparatus comprises projection screens that substantially surround the person.

24. (Currently Amended) The method according to claim [[1]] 12, wherein the values assigned to the polar plot are luminance values obtained from a band around the object that is one pixel wide.

25. (Currently Amended) The method according to claim [[1]] 12, wherein the values assigned to the polar plot are luminance values obtained from a band around the object that is multiple pixels wide.

26. (Original) The method according to claim 25, wherein the luminance values assigned to the polar plot represent a vertical average.

27. (Original) The method according to claim 25, wherein said assigning further comprises performing bi-linear interpolation for positions in the polar plot that are between pixels.

28. (Currently Amended) ~~The method according to claim 1,~~
A method for determining the angular orientation of an object comprising:
obtaining a plurality of images of the object;

assigning values to a plurality of positions in a polar plot using data from the images, the polar plot having an origin and data from each image being assigned to a corresponding sector of the polar plot and wherein the values assigned to the polar plot represent vertical luminance variance; and

computing a centroid based on the assigned values wherein an angle of the centroid with respect to the origin indicates the angular orientation of the object.

29. (Currently Amended) The method according to claim [[1]] 12, wherein the values assigned to the polar plot represent vertical frequency content.

30. (Currently Amended) A computer-readable medium encoded with a program of instructions executable by a machine to perform method steps for determining the angular orientation of an object, said method steps including obtaining a plurality of images of the object, assigning values to a plurality of positions in a polar plot using data from the images, the polar plot having an origin and data from each image being assigned to a corresponding sector of the polar plot, [[and]] computing a centroid based on the assigned values wherein an angle of the centroid with respect to the origin indicates the angular orientation of the object, and determining a location of the object in the field of view of each of the plurality of cameras and when the object is not in the center of the field of view, said assigning is corrected according to its distance from the center.

31. (Currently Amended) A system for determining the angular orientation of an object comprising:

a plurality of cameras that obtain a plurality of images of the object; ~~and~~

a computer that assigns values to a plurality of positions in a polar plot using data from the images, the polar plot having an origin and data from each image being assigned to a corresponding sector of the polar plot, and the computer computes a centroid based on the assigned values wherein an angle of the centroid with respect to the origin indicates the angular orientation of the object; and

the computer determining a location of the object in the field of view of each of the plurality of cameras and when the object is not in the center of the field of view, said assigning is corrected according to its distance from the center.

32. (Currently Amended) A method for determining the angular orientation of an object comprising:

obtaining a plurality of images of the object;

assigning values to a plurality of positions in a polar plot using data from the images, the polar plot having an origin and being in a plane that is independent of planes of the images; [[and]]

computing a centroid based on the assigned values wherein an angle of the centroid with respect to the origin indicates the angular orientation of the object; and

determining a location of the object in the field of view of each of a plurality of cameras and when the object is not in the center of the field of view, said assigning is corrected according to its distance from the center.

33. (Previously Presented) The method according to claim 32, wherein said assigning comprises identifying positions in the polar plot that are uniformly spaced, identifying corresponding pixels in the image for the positions in the polar plot and assigning luminance values for the pixels to the positions in the polar plot.

34. (Previously Presented) The method according to claim 32, wherein said assigning results in a non-linear mapping of pixel position to polar position.

35. (Previously Presented) The method according to claim 32, the polar plot is divided into sectors with an image of the plurality being obtained for each sector and with all sectors of the polar plot being imaged.

36. (Cancelled)

37. (Previously Presented) The method according to claim 32, wherein the object is a person's head.

38. (Previously Presented) The method according to claim 37, further comprising directing the person's voice at a remote location according to the angular orientation of the person's head.

39. (Previously Presented) The method according to claim 32, wherein the values assigned to the polar plot are luminance values obtained from a band around the object that is one pixel wide.

40. (Previously Presented) The method according to claim 32, wherein the values assigned to the polar plot are luminance values obtained from a band around the object that is multiple pixels wide.

41. (Currently Amended) ~~The method according to claim 32,~~
A method for determining the angular orientation of an object comprising:

obtaining a plurality of images of the object;

assigning values to a plurality of positions in a polar plot using data from the images wherein the values assigned to the polar plot represent vertical luminance variance, the polar plot having an origin and being in a plane that is independent of planes of the images; and

computing a centroid based on the assigned values wherein an angle of the centroid with respect to the origin indicates the angular orientation of the object.